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Five-Year Review Report

First Five-Year Review Report
for
Kohler Company Landfill
Village of Kohler
Sheboygan County, Wisconsin

August 2002

PREPARED BY:

Wisconsin Department of Natural Resources
Southeast Region
Milwaukee, Wisconsin

Approved by: Wm. E. Muno Date: 9/20/02
William E. Muno, Director
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Table of Contents

List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
CAMU	Corrective Action Management Unit
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CTH	County Trunk Highway
EPA	United States Environmental Protection Agency
CFR	Code of Federal Regulations
ECA	Environmental Contamination Assessment
ESD	Explanation of Significant Difference
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PAH	Polyaromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PRP	Potentially Responsible Party
RA	Remedial Action
RAA	Remedial Action Alternatives
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
RPM	Remedial Project Manager
ROD	Record of Decision
SDWA	Safe Drinking Water Act
TCE	Trichloroethylene
VOC	Volatile Organic Compound
WDNR	Wisconsin Department of Natural Resources

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Executive Summary

The remedy for the Kohler Company Landfill site in Kohler, Wisconsin included construction of a multi-layered clay capping system over 50% of the waste fill area, installation of a ground water interceptor drain system, discharge of the collected drain water to the City of Sheboygan POTW for treatment, and monitored natural attenuation of contaminated groundwater that had already migrated beyond the waste mass. The site achieved construction completion with the signing of the Preliminary Close Out Report on September 23, 1998. The trigger for this five-year review was the actual start of construction on June 9, 1997.

The assessment of this five-year review found that the remedy was constructed in accordance with the requirements of the Record of Decision (ROD). One Explanation of Significant Difference (ESD) was issued to allow a portion of the landfill to remain open until final grades were achieved and the site is capped in accordance with State code requirements. The remedy is functioning as designed. The immediate threats have been addressed and the remedy is expected to be protective when groundwater cleanup goals are achieved through water extraction and monitored natural attenuation, which is expected to require 30 years.

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Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Kohler Company Landfill Superfund Site		
EPA ID *(from WasteLAN)*: WID006073225		
Region: 5	**State:** WI	**City/County:** Kohler/Sheboygan
SITE STATUS		
NPL status: : Final G Deleted G Other (specify)		
Remediation status (choose all that apply): G Under Construction G Operating : Complete		
Multiple OUs?* G YES : NO	**Construction completion date:** 8 / 12 / 1998	
Has site been put into reuse? G YES : NO		
REVIEW STATUS		
Lead agency: : EPA G State G Tribe G Other Federal Agency		
Author name: Philip Fauble		
Author title: Remedial Project Manager	**Author affiliation:** WDNR, Southeast Region	
Review period:** 4 / 22 / 2002 to 8 / 31 / 2002		
Date(s) of site inspection: 8 / 8 / 2002		
Type of review: : Post-SARA G Pre-SARA G NPL-Removal only G Non-NPL Remedial Action Site G NPL State/Tribe-lead G Regional Discretion)		
Review number: : 1 (first) G 2 (second) G 3 (third) G Other (specify)		
Triggering action: G Actual RA On-site Construction at OU # 2 : Actual RA Start at OU# NA G Construction Completion G Previous Five-Year Review Report G Other (specify)		
Triggering action date *(from WasteLAN)*: 6 / 9 / 1997		
Due date *(five years after triggering action date)*: 6 / 9 / 2002		

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

None.

Recommendations and Follow-up Actions:

Continue pumping of contaminated liquids, cap portions of the landfill that reach final grades, and continue ground water monitoring in accordance with plan approvals.

Protectiveness Statement(s):

All immediate threats at the site have been addressed, and the remedy is expected to be protective of human health and the environment after the groundwater cleanup goals are achieved through pumping and MNA in an estimated 30 years.

Long-Term Protectiveness:

Long-term protectiveness of the remedial action will be verified by obtaining additional groundwater samples to fully evaluate the effectiveness of the perimeter drain system in preventing contaminated liquids from migrating from the waste mass towards the river. Current data indicate that significant amounts of contaminants are being intercepted by the drain system. Additional sampling and analysis will be conducted on a regular basis as required in the plan approvals. Marked improvements in the water quality of the upper aquifer indicate that the remedy is functioning as designed.

Other Comments:

None.

Kohler Company Landfill
Kohler, Wisconsin
First Five-Year Review Report

I. Introduction

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The Department is preparing this Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The U.S. EPA interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The Wisconsin Department of Natural Resources (WDNR) conducted the five-year review of the remedy implemented at the Kohler Company Landfill in Kohler, Wisconsin. This review was conducted by the State Remedial Project Manager (RPM) for the entire site from April 2002 through August 2002. This report documents the results of the review.

This is the first five-year review for the Kohler Company Landfill. The triggering action for this statutory review is the initiation of the remedial action on June 9, 1997. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1 - Chronology of Site Events

Event	Date
Waste pits developed within the landfill for the disposal of waste oils and solvents	1950's - 1975
Disposal of all hazardous waste (by current definition under RCRA) at the landfill ceases	1980
Final listing on EPA National Priorities List	1983
Kohler Company enters into an Administrative Order by Consent with the U.S. EPA	9/30/1985
Remedial Investigation/Feasibility Study (RI/FS) completed	1991
U.S. EPA splits site into 2 separate operable units (OU), one for source control and one for ground water	5/1991
ROD selecting a remedy for the source control operable unit (SCOU) is signed	3/30/1992
Wisconsin Department of Natural Resources (WDNR) assumes the role of lead agency for implementation of the SCOU remedy and selection of a remedy for the ground water operable unit (GWOU)	6/10/1992
Kohler Company submits Environmental Contamination Assessment (ECA)/Remedial Action Alternatives (RAA) report	11/9/1992
Plan modification approval from WDNR for the source control design	8/29/1995
ROD selecting a remedy for the GWOU is signed	6/26/1996
Plan modification approval from WDNR for revised SCOU design	7/10/1996
Work commences at the site for construction of the GWOU remedy (date that triggers a five-year-review)	6/9/1997
Work commences at the site for construction of the SCOU remedy	6/25/1997
Plan modification approval from the WDNR for the ground water monitoring plan	2/11/1998
Pre-final inspection of both operable units	8/12/1998
Explanation of Significant Difference (ESD) issued by U.S. EPA allowing for the continued filling of the landfill with non-hazardous solid waste until the site reaches final grades and is capped in accordance with State regulations	9/28/1998
Preliminary Close Out Report signed	9/28/1998

III. Background

Physical Characteristics

The Kohler Company Landfill is located in the NE ¼ of the SE ¼ of Section 29, T15N, R22E, within the corporate boundaries of the Village of Kohler, Wisconsin. The Village of Kohler is a community of approximately 1,817 residents (1990 census), located in Sheboygan County. The landfill is situated on an 82 acre parcel of land that is bounded on the south, east and far west by the Sheboygan River, to the west and south by County Trunk Highway (CTH) "A" and to the north by CTH "PP". Approximately one-half of the permitted 82-acre parcel has been or is currently being used for waste disposal (See Attachment 1).

Land and Resource Use

The historic land use of the site was farming until the Kohler Company began waste filling in the 1950's. From the 1950's until 1975, activities at the site included waste oil and solvent disposal in pits dug into the waste mass. The majority of the waste is foundry sand, pottery cull and other miscellaneous solid waste from the adjacent Kohler Manufacturing Plant. The facility is still actively accepting non-hazardous industrial waste generated at the plant.

With the exception of the public right-of-ways for CTHs "A" and "PP", the Kohler Company currently owns all land surrounding the landfill. Most of the land adjacent to the Sheboygan River is undeveloped and part of the Kohler Company's River Wildlife Reserve. North of the landfill is the Kohler Company Manufacturing Plant and some areas north and west of the waste mass are currently used for landfill support activities including soil stockpiles and materials storage for beneficial reuse. The Sheboygan River is used for recreation and fishing. Access to the site itself is restricted through gates, dense vegetation and topography. Three-quarters of the waste mass are contained beneath an impermeable cap, and all areas that had historically received hazardous waste (liquids or solids) have been covered.

The fractured dolomite aquifer underlying the site is used as a drinking water source, but there are no private wells near the landfill and strong upward gradients prevent contamination from migrating beyond the river. The dominant ground water flow direction in the shallow aquifer is east towards the Sheboygan River.

History of Contamination

The Kohler Landfill accepted mostly manufacturing waste from the Kohler Company plant including foundry sands, pottery cull, grinding dust and clay slurry. Between the 1950's and 1975, Kohler also disposed of various hydraulic oils, solvents, paint wastes, enamel powder and chrome plating sludges within pits dug out of the waste. Waste liquids seeped into the waste mass and soils surrounding the landfill causing contamination of soils and groundwater. Contamination in groundwater at the site consists primarily of volatile organic compounds (VOCs), including trichloroethylene (TCE) and vinyl chloride. Contaminants in soils and within the waste include polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons (PAHs), VOCs, and other organics and heavy metals. Rainfall on the uncapped landfill also caused contaminants to leach from the waste into the ground water. Seeps of contaminated liquids that drained into the Sheboygan River also developed at the southern toe of the landfill.

Initial Response

After reviewing data from the Kohler Landfill site, the WDNR recommended to the U.S. EPA that the site be included on the National Priorities List (NPL). The site was listed on the NPL in 1983 and, in 1985, the Kohler Company entered into an Administrative Order by Consent to prepare a remedial investigation and feasibility study (RI/FS) under the Comprehensive Response, Compensation and Liability Act (CERCLA). The RI/FS was completed in 1991 and record of decision (ROD) for the source control operable unit (SCOU) was finalized in 1992. The lead for the site was then passed to the WDNR for SCOU design and implementation and to finish the RI/FS for the ground water operable unit (GWOU). The ROD for the GWOU was finalized in 1996.

Basis for Taking Action

Contaminants

Hazardous substances that have been released at the site in each media include:

Waste	Groundwater
1,2-Dichloroethylene	Trichloroethylene
Trichloroethylene	Benzene
Benzene	1,1-Dichloroethane
Carbon disulfide	1,2-Dichloroethane
Ethylbenzene	Vinyl chloride
Toluene	Antimony
Xylene	Barium
Aluminum	Beryllium
Antimony	Cadmium
Arsenic	Chromium
Barium	
Beryllium	
Cadmium	
Chromium	
Cobalt	
Copper	
Fluoride	
Iron	
Lead	
Manganese	
Nickel	
Nitrate-nitrite	
Selenium	
Silver	
Sulfate	
Vanadium	
Zinc	
Phenol	
PAH's	

Exposures to exposed waste, leachate, or contaminated groundwater are associated with significant human health risks, due to exceedance of EPA's risk management criteria for either the average or the reasonable maximum exposure scenarios. Risks from exposure to exposed waste or leachate were significant due to the presence of various VOC's, semi-volatiles and metals. Potential risks associated with exposure to groundwater are attributed to the presence of a variety of VOC contaminants that exist at concentrations that exceed State and Federal MCLs.

IV. Remedial Actions

Remedy Selection

The ROD for the SCOU of the Kohler Company Landfill was signed on March 30, 1992 and the ROD for the GWOU was signed on June 26, 1996. Remedial Action Objectives (RAOs) were developed as a result of data collected during the Remedial Investigations to aid in the development and screening of remedial alternatives to be considered for the RODs. The RAOs for the Kohler Company Landfill were divided into the following groups:

Source Control Response Objectives

- Minimize the migration of contaminants from the landfill that could degrade groundwater quality by reducing infiltration of liquids through the waste mass;
- Reduce risks to human health by preventing direct contact with, and ingestion of, contaminants in the waste mass and liquid disposal pits;
- Reduce risks to the environment by preventing direct contact with, and ingestion of, contaminants by eliminating the surface leachate seeps; and
- Minimize the migration of contaminants from the landfill that could result in surface water contaminant concentrations that could result in detrimental effects to the Sheboygan River ecosystem.

Ground Water Response Objectives

- Eliminate or minimize the threat posed to human health and the environment by preventing exposure to groundwater contaminants;
- Prevent further migration of groundwater contamination beyond its current extent; and
- Restore contaminated groundwater to Federal and State applicable or relevant and appropriate requirements (ARARs), including drinking water standards, and to a level that is protective of human health and the environment within a reasonable period of time.

The major components of the source control operable unit remedy selected in the ROD include the following:

1. Closure of the landfill;
2. Construction of a clay cap over the waste mass in accordance with State solid waste regulations;
3. Collection, treatment and discharge of landfill leachate via a toe drain collection system;
4. Operational and surface controls for the remaining period of landfill operation, and
5. Access and use restrictions on the property.

The major components of the ground water operable unit remedy selected in the ROD include:

1. Installation of a perimeter drainage system along the eastern and southern toes of the waste mass to intercept all contaminated liquids originating from the landfill;
2. Discharge of all liquids collected from the perimeter drain system into a force main connected to the City of Sheboygan Publicly-Owned Treatment Works (POTW) for treatment and disposal;
3. Use of monitored natural attenuation (MNA) to achieve groundwater cleanup levels in areas beyond the perimeter drain;
4. Groundwater monitoring of existing and newly installed monitoring wells on the Kohler Company property and,
5. Five-year site reviews to assess site conditions, contaminant distributions, and any associated site hazards.

An ESD was issued on September 28, 1998. The original source control ROD did not address that fact that the landfill would remain open until it reached final grades estimated to occur in the year 2011. The Kohler Company had placed final cover on over 50 percent of the landfill and proposed phasing in construction of the balance of the landfill cap as filling reached final grades. EPA approved the recommended change. The primary changes documented in the ESD were:

- Permitting continued non-hazardous waste filling within the limits of the existing landfill, and
- Phased construction of the clay cap as the landfill reaches approved final grades.

Remedy Implementation

The remedial design and remedial action phase of the project was conducted through State solid waste management authority granted through ch. NR 500-526 of the Wisconsin Administrative Code. WDNR issued a Conditional Plan Modification Approval for design and construction of the SCOU on August 29, 1995 to the Kohler Company. A second Conditional Plan Modification Approval was issued by the WDNR on July 10, 1996 for implementation of the GWOU remedial design. As the sole responsible party (RP) for the Kohler Company Landfill, the Kohler Company paid all costs for construction and maintenance of the remedy. The Remedial Design (RD) was conducted in conformance with the RODs as modified by the ESD.

The Remedial Action (RA) consisted of two separate construction activities, one for the SCOU and one for the GWOU. Construction of the SCOU entailed installing a clay cap system on 50 percent of the waste mass, including the eastern and southern sideslopes. The activities for this phase were initiated on June 25, 1997 and were completed August 12, 1998. The major components of this phase of the RA were the following:

- Consolidating and regrading the waste mass;
- Placement and compaction of at least 2 feet of clay overlain by 18 inches of rooting zone material and topsoil;
- Seeding and mulching the finished slopes;

- Installation of surface water management measures (i.e. ditches, culverts, rip-rap);

Construction of the GWOU entailed installation of a perimeter drain system placed at the toe of the eastern and southern toes of the landfill. Activities for the GWOU phase of the RA were formally initiated on June 9, 1997 and work on the system was considered complete by December 1, 1997 when the pumps were activated. Major components for this phase of the RA include the following:

- Excavation of a ditch along the eastern and southern perimeter of the landfill;
- Placement of drainage pipe connected to 4 sumps and backfilling of the ditch with stone and soil;
- Installation of a force main connected to the sewage system to direct discharge from the perimeter drain to the Sheboygan POTW for treatment;
- Installation of control panels at each sump to regulate operation of the pumps;
- Replacement of monitoring wells that were abandoned due to remedial construction and,
- Establishment of a ground water monitoring system.

The contractors for the Kohler Company conducted remedial activities as planned and the WDNR and EPA conducted a pre-final inspection on August 12, 1998. During this period, just over 50 percent of the landfill was capped with 2 feet of compacted clay, topsoiled and seeded. An approximately 1,200-foot long perimeter drainage system was installed around the southern and eastern perimeter of the landfill. The pre-final inspection concluded that construction had been completed in accordance with the remedial design plans and specifications.

The site achieved construction completion status when the Preliminary Close Out Report was signed on September 28, 1998.

The WDNR and EPA have determined that all RA construction activities were performed according to specifications. It is expected that cleanup levels for all groundwater contaminants will have been reached within approximately thirty years. After groundwater cleanup levels have been met and the landfill closes after reaching final grades, the WDNR and EPA will issue a Final Close Out Report.

System Operation/Operation and Maintenance

The Kohler Company is conducting long-term monitoring and maintenance activities according to the SCOU and GWOU Conditional Plan Modification Approvals and the Ground Water Monitoring Approval issued by the WDNR. The primary activities associated with operations and maintenance (O&M) include the following:

- Visual inspection of the cap with regard to vegetative cover, settlement, stability, and any need for corrective action;
- Inspection of the drainage swales and ditches for blockage, erosion and instability, and any need for corrective action;
- Inspection of the condition of groundwater monitoring wells, collection sumps, force main, and control panels;
- Environmental monitoring: Quarterly monitoring of groundwater quality with leachate monitoring done in accordance with the approvals and POTW permit conditions and,
- Annual reports to the WDNR documenting the operation of the remedy.

The other remaining component of cleanup is the natural attenuation of ground water beyond the perimeter drain system. By capping the landfill and intercepting contaminated liquids before they can leave the waste fill limits, the source of ground water contamination beyond the drain system has been contained. Therefore, as indicated in the planned elements above, the primary O&M activities have been geared towards maintaining an operational drain system, monitoring ground water, and maintenance of the cap.

O&M costs include cap and perimeter drain maintenance, sampling and monitoring efforts, monitoring well maintenance, and discharge payments to the Sheboygan POTW. In the first year, costs were higher due to repair costs to the final cover after a severe rainfall event and the installation of a totalizing metering vault to provide backup to the flow metering system. Second year costs were elevated due to the costs associated with the addition of 4 ground water sampling wells and the unexpected replacement of the sump flow meters. Costs are expected to stabilize now that the system is functioning as intended. Not including extraordinary repair and replacement costs, the O&M costs are around $65,000 per year, well below the originally estimated annual costs of $139,000 per year.

Table 2 - Annual System Operations/O&M Costs

Dates		Total Cost rounded to nearest $1,000
From	To	
12/1997	12/1998	$181,000.00
1/1999	12/1999	$105,000.00
1/2000	12/2000	$63,000.00
1/2001	12/2001	$65,000.00
1/2002	7/2002	$42,000.00

V. Progress Since the Last Five-Year Review

This was the first five-year review for the site.

VI. Five-Year Review Process

Administrative Components

WDNR staff met with representatives of the Kohler Company on February 20, 2002 to notify them of the initiation of the five-year review. The Five-Year Review for the Kohler Company Landfill was conducted by Philip Fauble of the WDNR. Remedial Project Manager (RPM) for the Kohler Company Landfill.

From February 1 to March 15, 2002, the reviewer established a review schedule whose components included:

- Community Involvement;
- Document Review;
- Data Review;
- Site Inspection;
- Local Interviews; and
- Five-Year Review Report Development and Review.

The schedule extended through September 13, 2002.

Community Involvement

Activities to involve the community in the five-year review were initiated with a public notice prepared by the WDNR (Attachment 6) and sent to all local news outlets (newspapers, television and radio) that a five-year review was to be conducted at the Kohler Company Landfill. The notice invited members of the public to submit any comments to WDNR by June 1, 2002. The notice was also circulated through the WDNR's public and internal information systems.

There were no responses to the public notice.

On April 22, 2002, the Kohler Company also prepared an informational pamphlet describing the Five-Year Review process (Attachment 6). The pamphlet was widely distributed throughout the Kohler Company plant and the Village of Kohler.

Document Review

This five-year review consisted of a review of relevant documents including O&M records and monitoring data (See Attachment 3). Applicable groundwater cleanup standards, as listed in the 1996 Record of Decision, were reviewed.

Data Review

Ground Water Monitoring

Ground water monitoring has been conducted at the Kohler Company Landfill since the early 1980s. Ground water quality data from the site is spotty prior to initiation of the remedial action, but

what data was available indicated that contamination was present in significant quantities in both the shallow and deep aquifers beneath the site. The shallow (alluvial sediments) and deep (fractured Silurian-aged dolomite) aquifers are seperated by a laterally discontinuous stratum of varved lacustrian clay.

Significant portions of the existing ground water monitoring network had to be removed to accommodate construction of the remedial systems. The downgradient monitoring wells were replaced and quarterly ground water monitoring sampling was required as part of the WDNR's February 1, 1998 Plan Modification Approval. Therefore, most of the ground water data analysis focused on the information collected since early 1998. The Kohler Company is required to report their monitoring results to the WDNR every quarter for inclusion into the State's database.

Since activation of the perimeter drain system in late 1997, many contaminant concentrations have decreased dramatically while some have actually increased over time. This indicates that the ground water system's response to the perimeter drain is complex. In spite of this, certain patterns in the results can be discerned which give clues to contaminant behavior. The easiest way to evaluate this data is by breaking up the different contaminant responses by hydrostratigraphic unit.

The uppermost alluvial unit is monitored by two downgradient wells, 22-U and 21-U. Data generated from these two wells since the installation of the perimeter drain system indicates a marked improvement in water quality within the upper alluvial unit. Concentrations of trichloroethylene (TCE) and its degradation product cis-1,2-dichloroethylene (cis-1,2-DCE) have steadily declined, especially in well 21-U. Another daughter product of TCE dechlorination, vinyl chloride, was only detected at low levels or not detected at all. Although the chloride levels have remained steady, specific conductivity readings have dropped significantly in both wells. The improvement in the water quality of the upper unit can be tied to the effectiveness of the perimeter drain system at intercepting and containing leachate discharging from the landfill.

The confined unit located just below the varved lacustrine clays (sometimes referred to as the "lower till unit") is being monitored by two piezometers (21-L and 22-L) nested with alluvial wells. The ground water quality results from these wells reveal an entirely different response to the remedial action. Unlike the shallower wells, TCE has not been detected in either well. However, levels of the TCE daughter products of cis-1,2-DCE and vinyl chloride have increased dramatically since the installation of the remedial system. Vinyl chloride levels in well 21-L have almost tripled, from 289 ppb to 824 ppb, since 1998. In well 22-L, the vinyl chloride level went from non-detect to 11.68 ppb in that same time span. The cis-1,2-DCE increases were not as dramatic, but they were significant and steadily trending upward. Although it may seem counterintuitive, these dramatic increases in contaminant concentrations are indications that the perimeter drain system is functioning as designed. By lowering the ground water table through pumping, the drain system is drawing in deeper flow pathways that normally would be discharging into the Sheboygan River.

This effect is also mirrored by the monitoring wells screened in the shallow bedrock unit, 14-R and 14-SR. In both these deeper wells, the concentrations of both vinyl chloride and cis-1,2-DCE have increased dramatically, although their progenitor, TCE, has not been detected in either well. The most reasonable interpretation of these results is that there exists a substantial source of dense nonaqueous phase liquid (DNAPL) in the form of TCE deep within the bedrock aquifer. As the TCE undergoes reductive dechlorination, its daughter products are released into the deeper flow regimes. Prior to installation of the perimeter drain system, these contaminants would follow the flow to discharge into the Sheboygan River. The drain system has altered the hydrologic flow regime and is now intercepting an increasing amount of deeper, more contaminated, ground water. This process may actually be speeding

up the process of reductive dechlorination within the DNAPL mass, but that hasn't been proven.

The remedial system is operating as designed and is intercepting contaminated ground water from both the shallow and deep aquifers beneath the site. If ground water quality trends continue, the upper, shallow unit may achieve compliance with the cleanup goals within the next 5-10 years. Due to uncertainties regarding the degree and extent of the DNAPL source in the deeper aquifer, it is difficult to determine when the deeper wells might achieve the cleanup standards. The drain system is expected to operate for at least 30 years.

No potentially toxic or mobile transformation products have been identified during sampling events that were not already present at the time of the ROD, and therefore have cleanup goals specified in the ROD. There is also no evidence that the contaminant plume has migrated beyond the Sheboygan River.

Table 3 - Annual Comparison of Groundwater Concentrations

Well Number	Sample Date	Concentration in ppb				
		TCE	cis-1,2 DCE	Vinyl Chloride	Specific Conduct.	Chloride (in ppm)
14-R (267)	3/1998	ND	405	211	1271	71.9
	3/1999	ND	471	338	1251	67.7
	3/2000	ND	476	308	1216	72.8
	3/2001	ND	426.3	310.3	1131	68.1
	3/2002	ND	545	400.3	1052	71.3
14-SR (268)	3/1998	ND	538	253	1247	65.6
	3/1999	ND	589	456	1153	61.3
	3/2000	ND	694	527	1130	66.2
	3/2001	ND	776.3	600	1038	62.2
	3/2002	ND	893.3	817	963	61
21-U (301)	3/1998	NS	NS	NS	NS	NS
	3/1999	ND	8.95	ND	1650	49.4
	3/2000	1.13	7.97	ND	1448	53.3
	3/2001	0.56	7.57	2.57	1378	55.1
	3/2002	0.33	2.36	ND	1147	41.2
21-L (302)	3/1998	NS	NS	NS	NS	NS
	3/1999	ND	471	288	1055	59.4
	3/2000	ND	404.3	303	990	63.5
	3/2001	ND	623	455	977	63.3
	3/2002	ND	534	824	998	63.2
22-U (303)	3/1998	NS	NS	NS	NS	NS
	3/1999	2.2	14.3	1.25	3750	188.8
	3/2000	1.49	5.79	0.99	3500	191.8
	3/2001	1.59	7.3	ND	2020	87.6
	3/2002	1.68	7.77	0.3	2750	165.4
22-L (304)	3/1998	NS	NS	NS	NS	NS
	3/1999	ND	3.53	ND	661	13.3
	3/2000	ND	13.2	11.9	646	14.9
	3/2001	ND	20.68	5.88	455	13.4
	3/2002	ND	20.1	11.68	463	13.7

ND = Not Detected
NS = Not Sampled

■ = Value Above Clean-up Goal (NR 140 Enforcement Standard)

Leachate Monitoring

Quarterly analysis of leachate samples taken from the perimeter drain system found that levels of contaminants of concern were steadily decreasing. In an average year, the perimeter drain system will collect approximately 5, 500,000 gallons of liquid for discharge to the Sheboygan POTW where it is treated and ultimately discharged.

Table 4 - Annual Comparison of Leachate Concentrations

Contaminant	Concentration in ppb				
	1/1998	8/1998	8/1999	7/2000	8/2001
Trichloroethylene	2.19	2.43	1.54	1.72	1.19
1,2-Dichloroethylene	NS	21	16.2	11.46	5.35
Vinyl Chloride	1.87	0.49	1.71	1.18	ND
Chloride (in ppm)	171.5	157.7	169.4	134.7	165.4

ND = Not Detected
NS = Not Sampled

Site Inspection

A site inspection was conducted on August 8, 2002, by the RPM (See Attachment 5). The purpose of the inspections was to assess the protectiveness of the remedy, including the maintenance and operation of the perimeter ground water interception drain and pumps, the integrity of the cap, and the condition of the surface water diversion systems and monitoring wells.

No significant issues have been identified at any time regarding the cap, the drainage structures, or the perimeter drain system. Damage to the site from the major storm event noted in the 1998 Pre-final Inspection had been repaired and no subsequent damage was noted. It was noted that the Kohler Company has capped an additional 25 percent of the landfill bringing the total landfill area with final cover placement to 75 percent. All drainage structures were intact and functioning as designed and the vegetative cover on the capped areas of the landfill was thriving. A portion of the old landfill is being used a staging area for waste products (pottery cull and foundry sand) until they can be shipped off site for beneficial reuse projects.

The ground water interceptor drain on the southern and eastern perimeter of the landfill was operational and well maintained. Due to a dry spell, only one of the four sumps was active during the inspection. The groundwater monitoring wells were in good shape and secure. Security and institutional controls appear to be effective as there was no evidence of unauthorized access to the site (i.e. graffitti, tire tracks, campfires). There was no new development directly adjacent to the site and no new uses of groundwater were observed.

Public Input

On April 22, 2002, the WDNR prepared a press release that was sent to all the local media outlets around the Village of Kohler. The release was also posted on the WDNR's Internet site, which is accessible to the public. The release contained a brief summary of the site activities, the 5-year review

process and a solicitation for public comment. The public comment period extended from April 22, 2002 until June 1, 2002. No comments concerning the Kohler Company Landfill or the 5-year review process were received during this period.

Interviews were also conducted with various parties connected to the site. On June 12, 2002 the PM contacted David Doerr, Superintendent of the City of Sheboygan's Public Treatment Works concerning the treatment and disposal of liquids from the landfill's perimeter drain system. Mr. Doerr related that the contaminated liquids from the remedial system were not causing any problems for the treatment plant and the Kohler Company was in compliance with all aspects of their discharge permit. On July 29, 2002, the PM also contacted Cameron Davis, Executive Director of the Lake Michigan Federation. The Federation was the recipient of a Technical Assistance Grant (TAG) from the U.S. EPA and commented extensively on the ROD for the Kohler Landfill. Mr. Davis stated that they currently did not have anyone assigned to this site and that they had nothing to contribute to the review process.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

The review of documents, ARARs, risk assumptions, and the results of the site inspection indicate that the remedy is functioning as intended by the ROD, as modified by the ESD. The capping of contaminated wastes within the landfill has achieved the remedial objectives to minimize the migration of contaminants to groundwater and surface water and prevent direct contact with, or ingestion of, contaminants in waste materials. The effective implementation of institutional controls has prevented exposure to, or ingestion of, contaminated groundwater.

Operation and maintenance of the cap and drainage structures has, on the whole, been effective. With the exception of extraordinary events, the O&M annual costs are actually somewhat less than the original estimates. There have been some minor difficulties with implementation of the remedy, but the Kohler Company has promptly taken steps to correct the problem and maximize the efficiency of the remedial system.

There were no opportunities for system optimization observed during this review. The monitoring well network provides sufficient data to assess the progress of natural attenuation within the plume and the effectiveness of the perimeter drain system. Maintenance on the cap is sufficient to maintain its integrity and new sections of cap are constructed as filling achieves final grades.

No activities were observed that would have violated the institutional controls. The cap and the surrounding area were in good repair, there were no signs of unauthorized access, and no new uses of groundwater were observed. The gate to the site is intact and in good repair.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy.

Changes in Standards and To Be Considered

ARARs that still must be met at this time and that have been evaluated include: ch. NR 140, Wisconsin Administrative Code (Enforcement Standards and Preventative Action Levels); the Safe Drinking Water Act (SDWA) (40 CFR 141.11-141.16) from which many of the groundwater cleanup levels were derived - [Maximum Contaminant Levels (MCLs), and MCL Goals (MCLGs)]; and ARARs related to monitoring, landfill capping, and operation of the perimeter drain system as contained in the WDNR Plan Modification Approvals. There have been no changes in these ARARs and no new standards or TBCs affecting the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics

The exposure assumptions used to develop the Human Health Risk Assessment included both current exposures (older child trespasser, adult trespasser) and potential future exposures (young and older future child resident, future adult resident and future adult worker). There have been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment. These assumptions are considered to be conservative and reasonable in evaluating risk and developing risk-based cleanup levels. No change to these assumptions, or the cleanup levels developed from them is warranted. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. The remedy is progressing as expected and it is expected that all groundwater cleanup levels will be met within approximately 30 years.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

There is no information generated during the 5-year review process or other information that calls into question the protectiveness of the remedy.

Technical Assessment Summary

According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the ROD, as modified by the ESD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. There has been no changes in the toxicity factors for the contaminants of concern that were used in the baseline risk assessment, and there have been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. There is no other information that calls into question the protectiveness of the remedy.

VIII. Issues

No issues were identified that would affect either the current or future protectiveness of the remedy.

IX. Recommendations and Follow-Up Actions

No issues were identified therefore no follow-up actions are necessary at this site. Recommend that the remedy continue to be implemented in accordance with the provisions of the ROD and the Plan Modification Approvals.

X. Protectiveness Statement

The remedy is expected to be protective of human health and the environment upon attainment of groundwater cleanup goals, through pumping of the perimeter drain system and natural attenuation, which is expected to require 30 years to achieve. In the interim, exposure pathways that could result in unacceptable risks are being controlled and institutional controls are preventing exposure to, or the ingestion of, contaminated groundwater. All threats at the site have been addressed through capping of contaminated waste materials, the installation of a perimeter drain system, and the implementation of institutional controls.

Long-term protectiveness of the remedial action will be verified by obtaining additional groundwater samples to fully evaluate potential migration of the contaminant plume downgradient from the landfill and towards the river. Current data indicate that the plume is not migrating beyond the river. Additional sampling and analysis will be completed quarterly until the ARARs are met. Current monitoring data indicate that the remedy is functioning as required to achieve groundwater cleanup goals.

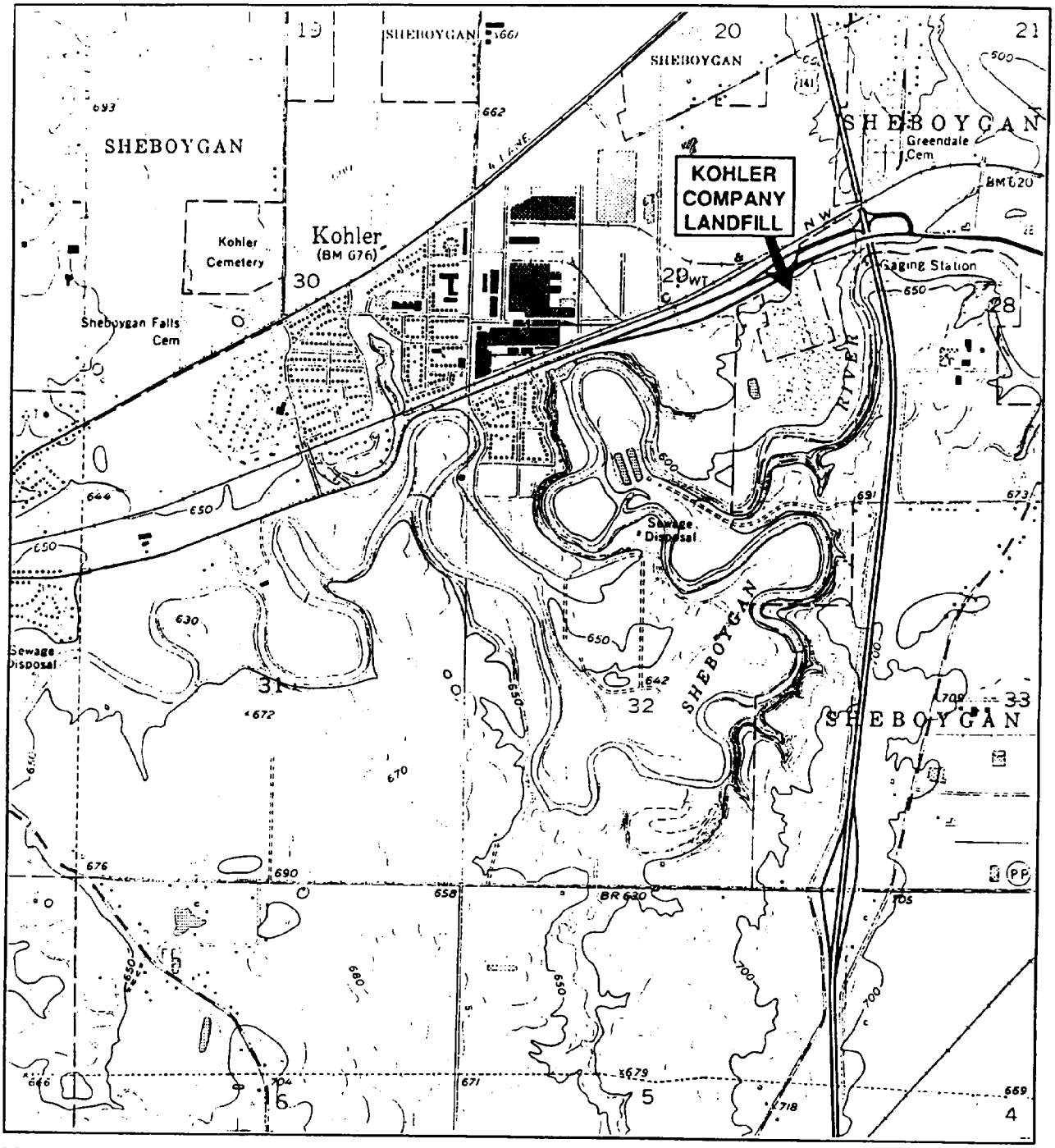
XI. Next Review

The next five-year review for the Kohler Company Landfill Site is required by June 2007, five years from the date of this review.

ATTACHMENTS

Attachment 1

Site Location Map



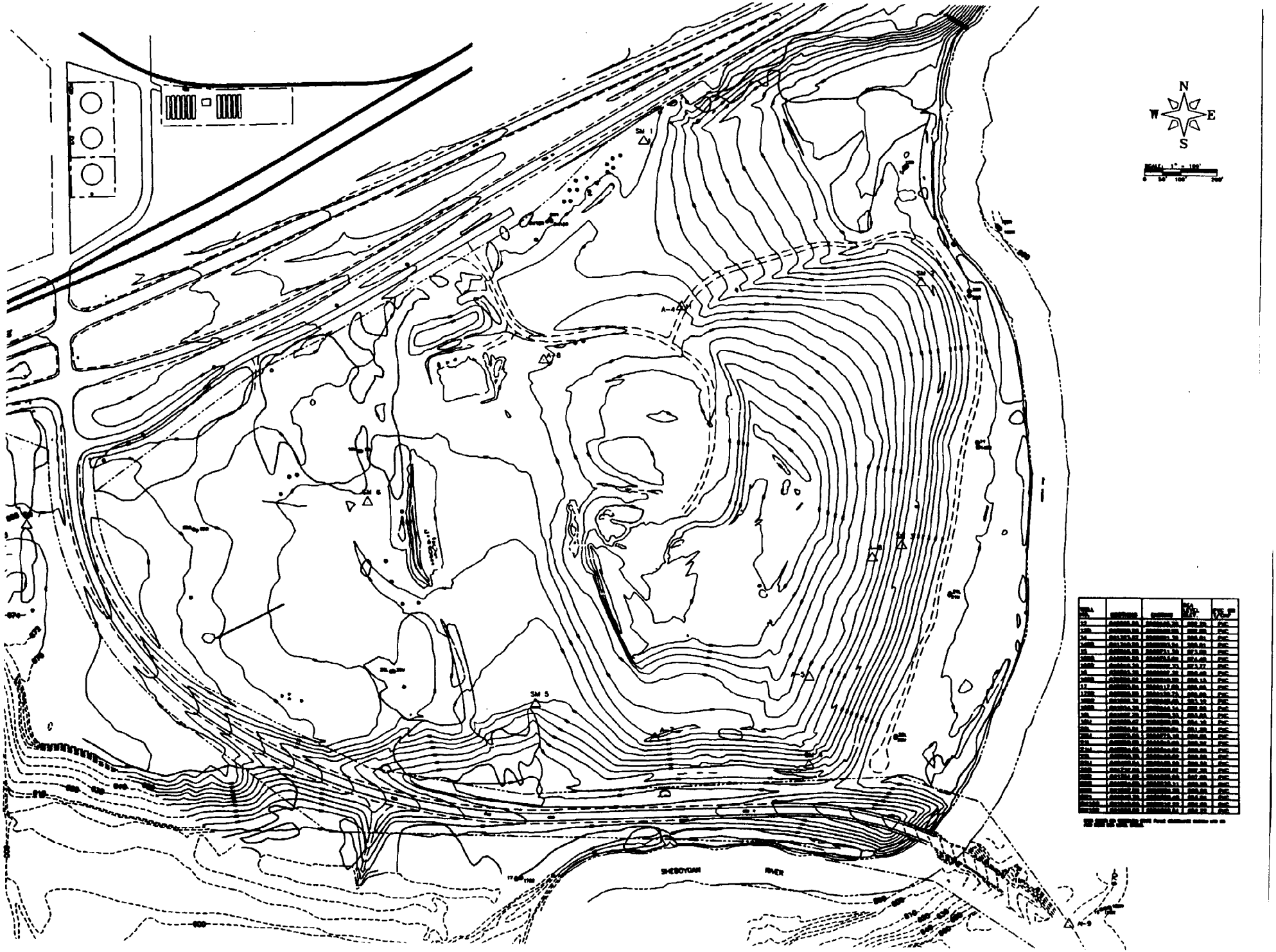
SOURCE: USGS 7.5 Minute Topographic Map, SHEBOYGAN FALLS, WISCONSIN Quadrangle, 1973

GERAGHTY & MILLER, INC.
Environmental Services

FIGURE 2-1
SITE LOCATION MAP
KOHLER COMPANY LANDFILL
FEASIBILITY STUDY
KOHLER, WISCONSIN
WI164.01 - 0154.00

Attachment 2

Site Plan


N
W
E
S
SM 5
SHEBOYGAN
RIVER

Attachment 3

Monitoring Data

License: 1508 KOHLER CO LF FID: 460015380 Southeast Region County: Sheboygan

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std
267	14R	GM605	Piezometer-Non Sub D Well	Active	Down	N

Sample Date	Parameter				Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
03/17/1998	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)			15.000		ug/L	J	10	33.3		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)			241.000	(P)	ug/L		20	66.7		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)			405.000	(P)	ug/L		15	50.0		M	M	M
	** Totals For All Detects **		Detect Count: 3	Total:	661.000									
06/12/1998	34311	CHLOROETHANE IN WHL WTR SAMPLE (UG/L)			9.000		ug/L	J	7.5	25.0		M	M	M
	34423	DICHLOROMETHANE IN WHL WTR SAMPLE (UG/L)			15.000		ug/L	J	7.5	25.0		F	M	M
	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)			12.500		ug/L	J	5	16.7		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)			231.000	(P)	ug/L		10	33.3		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)			348.500	(P)	ug/L		7.5	25.0		M	M	M
	** Totals For All Detects **		Detect Count: 4	Total:	601.000									
09/17/1998	34423	DICHLOROMETHANE IN WHL WTR SAMPLE (UG/L)			19.000		ug/L	J	15	50.0		F	M	M
	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)			13.500		ug/L	J	10	33.3		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)			241.000	(P)	ug/L		0.25	0.8		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)			309.000	(P)	ug/L		15	50.0		M	M	M
	** Totals For All Detects **		Detect Count: 3	Total:	563.500									
12/14/1998	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)			14.000		ug/L	J	10	33.3		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)			310.000	(P)	ug/L		25	83.3		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)			382.000	(P)	ug/L		15	50.0		M	M	M
	** Totals For All Detects **		Detect Count: 3	Total:	706.000									
03/24/1999	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)			23.000		ug/L	J	10	33.3		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)			338.000	(P)	ug/L		25	83.3		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)			471.000	(P)	ug/L		15	50.0		M	M	M
	** Totals For All Detects **		Detect Count: 3	Total:	832.000									
06/28/1999	32101	BROMODICHLOROMETHANE IN WHOLE WATER SAMPLE (UG/L)			26.000		ug/L	J	20	66.7		M	M	M
	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)			22.000		ug/L	J	20	66.7		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)			496.000	(P)	ug/L		50	166.7		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)			414.000	(P)	ug/L		30	100.0		M	M	M

(P) Attains or Exceeds NR140 Preventive Action Limit (E) Attains or Exceeds NR140 Enforcement Standard
J: LOD < Result < LOQ D: Duplicate (Duplicates and QC Failures are not included in totals) PWS: Data from Public Water Supply

License: 1508 KOHLER CO LF FID: 460015380 Southeast Region County: Sheboygan

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
267	14R	GM605	Piezometer-Non Sub D Well	Active	Down	N	(Continued)

Sample Date	Parameter	Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
06/28/1999	** Totals For All Detects ** Detect Count: 4 Total:	958.000									
09/23/1999	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	492.000	(P)	ug/L		50	166.7		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	412.000	(P)	ug/L		30	100.0		M	M	M
	** Totals For All Detects ** Detect Count: 2 Total:	904.000									
12/21/1999	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	605.000	(P)	ug/L		20	66.7		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	398.000	(P)	ug/L		25	83.3		M	M	M
	** Totals For All Detects ** Detect Count: 2 Total:	1003.000									
03/22/2000	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	898.000	(P)	ug/L		20	66.7		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	476.000	(P)	ug/L		25	83.3		M	M	M
	** Totals For All Detects ** Detect Count: 2 Total:	1374.000									
09/26/2000	34496 1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	16.500		ug/L	J	15	50.0		M	M	M
	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	556.000	(P)	ug/L		10	33.3		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	498.000	(P)	ug/L		17.5	58.3		M	M	M
	** Totals For All Detects ** Detect Count: 3 Total:	1070.500									
03/15/2001	34496 1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	16.000		ug/L	J	15	50.0		M	M	M
	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	513.500	(P)	ug/L		10	33.3		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	454.500	(P)	ug/L		17.5	58.3		M	M	M
	** Totals For All Detects ** Detect Count: 3 Total:	984.000									
09/18/2001	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	707.500	(P)	ug/L		10	33.3		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	428.000	(P)	ug/L		17.5	58.3		M	M	M
	** Totals For All Detects ** Detect Count: 2 Total:	1135.500									
03/13/2002	34423 DICHLOROMETHANE IN WHL WTR SAMPLE (UG/L)	26.500		ug/L	J	15	50.0		M	M	M
	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	843.500	(P)	ug/L		7.5	25.0		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	547.000	(P)	ug/L		5	16.7		M	M	M
	** Totals For All Detects ** Detect Count: 3 Total:	1417.000									

(P) Attains or Exceeds NR140 Preventive Action Limit (E) Attains or Exceeds NR140 Enforcement Standard
J: LOD < Result < LOQ D: Duplicate (Duplicates and QC Failures are not included in totals) PWS: Data from Public Water Supply

License: 1508 KOHLER CO LF FID: 460015380 Southeast Region County: Sheboygan

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std
268	14SR	GM606	Piezometer-Non Sub D Well	Active	Down	N

Sample Date		Parameter			Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
03/17/1998		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		21.000		ug/L	J	10	33.3		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		253.000	(P)	ug/L		20	66.7		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		538.000	(P)	ug/L		15	50.0		M	M	M
	** Totals For All Detects **		Detect Count: 3	Total:	812.000									
06/12/1998		34423	DICHLOROMETHANE IN WHL WTR SAMPLE (UG/L)		24.500		ug/L	J	7.5	25.0		F	M	M
		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		16.500		ug/L	J	5	16.7		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		282.500	(P)	ug/L		10	33.3		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		508.500	(P)	ug/L		7.5	25.0		M	M	M
	** Totals For All Detects **		Detect Count: 3	Total:	807.500									
09/17/1998		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		11.000		ug/L	J	10	33.3		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		236.000	(P)	ug/L		25	83.3		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		288.000	(P)	ug/L		15	50.0		M	M	M
	** Totals For All Detects **		Detect Count: 3	Total:	535.000									
12/14/1998		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		18.000		ug/L	J	10	33.3		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		335.000	(P)	ug/L		25	83.3		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		650.000	(P)	ug/L		15	50.0		M	M	M
	** Totals For All Detects **		Detect Count: 3	Total:	1003.000									
03/24/1999		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		26.000		ug/L	J	20	66.7		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		366.000	(P)	ug/L		50	166.7		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		846.000	(P)	ug/L		30	100.0		M	M	M
	** Totals For All Detects **		Detect Count: 3	Total:	1238.000									
06/28/1999	D	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		25.000		ug/L	J	25	83.3		M	M	M
	D	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		518.000	(P)	ug/L		62.5	208.3		M	M	M
	D	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		555.000	(P)	ug/L		37.5	125.0		M	M	M
		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		25.000		ug/L	J	25	83.3		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		430.000	(P)	ug/L		62.5	208.3		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		585.000	(P)	ug/L		37.5	125.0		M	M	M

(P) Attains or Exceeds NR140 Preventive Action Limit (E) Attains or Exceeds NR140 Enforcement Standard
J: LOD < Result < LOQ D: Duplicate (Duplicates and QC Failures are not included in totals) PWS: Data from Public Water Supply

License: 1508 KOHLER CO LF FID: 460015380 Southeast Region County: Sheboygan

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std
268	14SR	GM606	Piezometer-Non Sub D Well	Active	Down	N

(Continued)

Sample Date	Parameter	Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
06/28/1999	** Totals For All Detects ** Detect Count: 3 Total:	1040.000									
09/23/1999	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	508.000	(P)	ug/L		62.5	208.3		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	558.000	(P)	ug/L		37.5	125.0		M	M	M
	** Totals For All Detects ** Detect Count: 2 Total:	1066.000									
12/21/1999	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	642.000	(P)	ug/L		10	33.3		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	540.000	(P)	ug/L		12.5	41.7		M	M	M
	** Totals For All Detects ** Detect Count: 2 Total:	1182.000									
03/22/2000	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	951.000	(P)	ug/L		20	66.7		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	694.000	(P)	ug/L		25	83.3		M	M	M
	** Totals For All Detects ** Detect Count: 2 Total:	1645.000									
09/26/2000	34496 1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	21.500		ug/L	J	15	50.0		M	M	M
	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	637.000	(P)	ug/L		10	33.3		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	768.000	(P)	ug/L		17.5	58.3		M	M	M
	** Totals For All Detects ** Detect Count: 3 Total:	1426.500									
03/15/2001	34496 1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	18.500		ug/L	J	15	50.0		M	M	M
	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	600.000	(P)	ug/L		10	33.3		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	776.500	(P)	ug/L		17.5	58.3		M	M	M
	** Totals For All Detects ** Detect Count: 3 Total:	1395.000									
09/18/2001	34496 1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	18.500		ug/L	J	15	50.0		M	M	M
	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	945.500	(P)	ug/L		10	33.3		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	678.500	(P)	ug/L		17.5	58.3		M	M	M
	** Totals For All Detects ** Detect Count: 3 Total:	1642.500									
03/13/2002	34496 1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	20.000		ug/L	J	17.5	58.3		M	M	M
	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	817.000	(P)	ug/L		7.5	25.0		M	M	M
	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	893.500	(P)	ug/L		5	16.7		M	M	M

(P) Attains or Exceeds NR140 Preventive Action Limit (E) Attains or Exceeds NR140 Enforcement Standard
J: LOD < Result < LOQ D: Duplicate (Duplicates and QC Failures are not included in totals) PWS: Data from Public Water Supply

License: 1508 KOHLER CO LF FID: 460015380 Southeast Region County: Sheboygan

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
268	14SR	GM606	Piezometer-Non Sub D Well	Active	Down	N	(Continued)

Sample Date		Parameter	Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
03/13/2002		** Totals For All Detects ** Detect Count: 3 Total: 1730.500										

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std
301	MW-21U	NI270	MT Obs Well-Non Sub D	Active	Down	Y

Sample Date		Parameter	Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
09/18/1998	D	34423 DICHLOROMETHANE IN WHL WTR SAMPLE (UG/L)	2.900	(P)	ug/L		0.75	2.5		F	M	M
	D	34546 TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)	1.100		ug/L	J	0.75	2.5		M	M	M
	D	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	2.340		ug/L	J	1.25	4.2		M	M	M
	D	39180 TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	1.900		ug/L	J	1.25	4.2		M	M	M
	D	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	31.000	(P)	ug/L		0.75	2.5		M	M	M
		34423 DICHLOROMETHANE IN WHL WTR SAMPLE (UG/L)	2.100		ug/L	J	0.75	2.5		F	M	M
		34546 TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)	1.150		ug/L	J	0.75	2.5		M	M	M
		39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	2.150		ug/L	J	1.25	4.2		M	M	M
		39180 TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	1.700		ug/L	J	1.25	4.2		M	M	M
		77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	22.600	(P)	ug/L		0.75	2.5		M	M	M
		** Totals For All Detects ** Detect Count: 4 Total: 27.600										
12/15/1998		34010 TOLUENE IN WHOLE WATER SAMPLE (UG/L)	2.500		ug/L	J	1	3.3		F	M	M
		77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	17.700	(P)	ug/L		1.5	5.0		M	M	M
		** Totals For All Detects ** Detect Count: 1 Total: 17.700										
03/24/1999		77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	8.950	(P)	ug/L		0.75	2.5		M	M	M
		** Totals For All Detects ** Detect Count: 1 Total: 8.950										
06/22/1999		77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	7.500	(P)	ug/L		0.75	2.5		M	M	M
		** Totals For All Detects ** Detect Count: 1 Total: 7.500										
09/22/1999		77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	14.200	(P)	ug/L		0.75	2.5		M	M	M
		** Totals For All Detects ** Detect Count: 1 Total: 14.200										

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Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
301	MW-21U	MI270	WT Obs Well-Non Sub D	Active	Down	Y	(Continued)

Sample Date		Parameter		Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
12/21/1999	D	34546	TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)	.510		ug/L	J	0.2	0.7		M	M	M
	D	39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	.410		ug/L	J	0.25	0.8		M	M	M
	D	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	7.790	(P)	ug/L		0.25	0.8		M	M	M
		34546	TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)	.540		ug/L	J	0.2	0.7		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	.430		ug/L	J	0.25	0.8		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	7.680	(P)	ug/L		0.25	0.8		M	M	M
	** Totals For All Detects **		Detect Count: 3 Total:	8.650									
03/22/2000		34546	TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)	.620		ug/L	J	0.2	0.7		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	1.130	(P)	ug/L		0.25	0.8		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	7.970	(P)	ug/L		0.25	0.8		M	M	M
	** Totals For All Detects **		Detect Count: 3 Total:	9.720									
09/25/2000		34546	TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)	.510		ug/L	J	0.3	1.0		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	1.440	(P)	ug/L		0.35	1.2		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	9.350	(P)	ug/L		0.35	1.2		M	M	M
	** Totals For All Detects **		Detect Count: 3 Total:	11.300									
03/15/2001		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	2.570	(E)	ug/L		0.2	0.7		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	.560		ug/L	J	0.35	1.2		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	7.570	(P)	ug/L		0.35	1.2		M	M	M
	** Totals For All Detects **		Detect Count: 3 Total:	10.700									
09/18/2001		34546	TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)	.630		ug/L	J	0.3	1.0		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	.650		ug/L	J	0.35	1.2		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	3.400		ug/L		0.35	1.2		M	M	M
	** Totals For All Detects **		Detect Count: 3 Total:	4.680									
03/12/2002	D	34546	TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)	.190		ug/L	J	0.15	0.5		M	M	M
	D	39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	.280		ug/L	J	0.1	0.3		M	M	M
	D	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	1.990		ug/L		0.1	0.3		M	M	M
		34546	TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)	.360		ug/L	J	0.15	0.5		M	M	M

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Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
301	MW-21U	NI270	WT Obs Well-Non Sub D	Active	Down	Y	(Continued)

Sample Date		Parameter	Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
03/12/2002		39180 TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	.330		ug/L		0.1	0.3		M	M	M
		77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	2.360		ug/L		0.1	0.3		M	M	M
		** Totals For All Detects ** Detect Count: 3 Total:	3.050									

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std
302	MW-21L	NI271	Piezometer-Non Sub D Well	Active	Down	Y

Sample Date		Parameter	Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
09/18/1998		34496 1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	9.500		ug/L	J	5	16.7		M	M	M
		39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	184.000	(E)	ug/L		12.5	41.7		M	M	M
		77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	186.000	(E)	ug/L		7.5	25.0		M	M	M
		** Totals For All Detects ** Detect Count: 3 Total:	379.500									
12/15/1998		39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	186.000	(E)	ug/L		25	83.3		M	M	M
		77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	295.000	(E)	ug/L		15	50.0		M	M	M
		** Totals For All Detects ** Detect Count: 2 Total:	481.000									
03/24/1999		34496 1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	17.000		ug/L	J	10	33.3		M	M	M
		39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	289.000	(E)	ug/L		25	83.3		M	M	M
		77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	471.000	(E)	ug/L		15	50.0		M	M	M
		** Totals For All Detects ** Detect Count: 3 Total:	777.000									
06/22/1999	D	34496 1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	18.800		ug/L	J	12.5	41.7		M	M	M
	D	39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	602.000	(E)	ug/L		31.2	104.0		M	M	M
	D	77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	409.000	(E)	ug/L		18.8	62.7		M	M	M
		34496 1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	20.000		ug/L	J	12.5	41.7		M	M	M
		39175 VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	686.000	(E)	ug/L		31.2	104.0		M	M	M
		77093 CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	429.000	(E)	ug/L		18.8	62.7		M	M	M
		** Totals For All Detects ** Detect Count: 3 Total:	1135.000									

09/22/1999

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Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
302	MW-21L	NI271	Piezometer-Non Sub D Well	Active	Down	Y	(Continued)

Sample Date	Parameter		Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
09/22/1999	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	760.000	(E)	ug/L		50	166.7		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	422.000	(E)	ug/L		30	100.0		M	M	M
	** Totals For All Detects ** Detect Count: 2 Total:		1182.000									
12/21/1999	32101	BROMODICHLOROMETHANE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
	32102	CARBON TETRACHLORIDE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
	32103	1,2-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.4	1.3		M	M	M
	32104	TRIBROMOMETHANE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.4	1.3		M	M	M
	32105	DIBROMOCHLOROMETHANE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.25	0.8		M	M	M
	32106	CHLOROFORM IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.4	1.3		M	M	M
	34010	TOLUENE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.15	0.5		M	M	M
	34030	BENZENE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.15	0.5		M	M	M
	34301	CHLOROBENZENE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.25	0.8		M	M	M
	34311	CHLOROETHANE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.25	0.8		M	M	M
	34413	BROMOMETHANE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.5	1.7		M	M	M
	34418	CHLOROMETHANE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.4	1.3		M	M	M
	34423	DICHLOROMETHANE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
	34475	TETRACHLOROETHYLENE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
	34488	FLUOROTRICHLOROMETHANE IN WHOLE WATER SAMPLE(UG/L)	.000		ug/L		0.2	0.7		M	M	M
	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
	34501	1,1-DICHLOROETHYLENE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.6	2.0		M	M	M
	34506	1,1,1-TRICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
	34511	1,1,2-TRICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.4	1.3		M	M	M
	34536	O-DICHLOROBENZENE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
	34541	1,2-DICHLOROPROPANE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.25	0.8		M	M	M
	34546	TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)	.000		ug/L		0.2	0.7		M	M	M
	34566	M-DICHLOROBENZENE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
	34571	P-DICHLOROBENZENE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.3	1.0		M	M	M
	34668	DICHLORODIFLUOROMETHANE IN WHOLE WTR SAMPLE (UG/L)	.000		ug/L		0.3	1.0		M	M	M
	34696	NAPHTHALENE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.35	1.2		M	M	M

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Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
302	MW-21L	NI271	Piezometer-Non Sub D Well	Active	Down	Y	(Continued)

Sample Date		Parameter		Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
12/21/1999		34699	TRANS-1,3-DICHLOROPROPENE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
		38437	1,2-DIBROMO-3-CHLOROPROPANE IN WHL WTR SAMP (UG/L)	.000		ug/L		0.5	1.7		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	.000		ug/L		0.25	0.8		M	M	M
		77041	CARBON DISULFIDE IN WHL WATER SAMPLE (UG/L)	.000		ug/L		0.1	0.3		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	.000		ug/L		0.25	0.8		M	M	M
		77128	STYRENE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
		77135	XYLENE, O-, IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
		77596	DIBROMOMETHANE IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.5	1.7		M	M	M
		77651	1,2-DIBROMOETHANE (EDB) (UG/L)	.000		ug/L		0.4	1.3		M	M	M
		78032	METHYL TERT-BUTYL ETHER (MTBE), WHL WTR SMPL(UG/L)	.000		ug/L		0.25	0.8		M	M	M
		78113	ETHYLBENZENE IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.2	0.7		M	M	M
		81595	METHYL ETHYL KETONE (MEK) IN WHL WTR SAMPLE (UG/L)	.000		ug/L		0.65	2.2		M	M	M
		85795	XYLENE, M & P-, IN WHOLE WATER SAMPLE (UG/L)	.000		ug/L		0.4	1.3		M	M	M
		** Totals For All Detects **	Detect Count: 40 Total:	.000									
03/22/2000	D	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	12.000		ug/L	J	10	33.3		M	M	M
	D	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	773.000	(E)	ug/L		10	33.3		M	M	M
	D	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	392.000	(E)	ug/L		12.5	41.7		M	M	M
		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	13.000		ug/L	J	10	33.3		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	803.000	(E)	ug/L		10	33.3		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	404.500	(E)	ug/L		12.5	41.7		M	M	M
		** Totals For All Detects **	Detect Count: 3 Total:	1220.500									
09/25/2000		32106	CHLOROFORM IN WHOLE WATER SAMPLE (UG/L)	36.500		ug/L	J	20	66.7		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	578.000	(E)	ug/L		10	33.3		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	426.000	(E)	ug/L		17.5	58.3		M	M	M
		** Totals For All Detects **	Detect Count: 3 Total:	1040.500									
03/15/2001		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	17.500		ug/L	J	15	50.0		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	555.000	(E)	ug/L		10	33.3		M	M	M

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Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
302	MW-21L	NI271	Piezometer-Non Sub D Well	Active	Down	Y	(Continued)

Sample Date	Parameter			Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
03/15/2001	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		623.000	(E)	ug/L		17.5	58.3		M	M	M
	** Totals For All Detects **	Detect Count: 3	Total:	1195.500									
09/18/2001	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		21.000		ug/L	J	30	100.0		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		1002.000	(E)	ug/L		20	66.7		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		535.000	(E)	ug/L		35	116.7		M	M	M
	** Totals For All Detects **	Detect Count: 3	Total:	1558.000									
03/12/2002	32106	CHLOROFORM IN WHOLE WATER SAMPLE (UG/L)		10.500		ug/L	J	10	33.3		M	M	M
	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		22.500		ug/L	J	17.5	58.3		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		824.000	(E)	ug/L		7.5	25.0		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		534.000	(E)	ug/L		5	16.7		M	M	M
	** Totals For All Detects **	Detect Count: 4	Total:	1391.000									

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std
303	MW-22U	NI272	WT Obs Well-Non Sub D	Active	Down	Y

Sample Date	Parameter			Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
09/21/1998	34030	BENZENE IN WHOLE WATER SAMPLE (UG/L)		.800		ug/L	J	0.75	2.5		M	M	M
	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		1.900		ug/L		0.5	1.7		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		2.900		ug/L	J	1.25	4.2		M	M	M
	39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)		2.450		ug/L	J	1.25	4.2		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		9.800	(P)	ug/L		0.75	2.5		M	M	M
	** Totals For All Detects **	Detect Count: 5	Total:	17.850									
12/16/1998	34010	TOLUENE IN WHOLE WATER SAMPLE (UG/L)		1.050		ug/L	J	0.5	1.7		M	M	M
	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		2.250		ug/L		0.5	1.7		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		4.900	(E)	ug/L		1.25	4.2		M	M	M
	39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)		2.500		ug/L	J	1.25	4.2		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		16.300	(P)	ug/L		0.75	2.5		M	M	M

(P) Attains or Exceeds NR140 Preventive Action Limit (E) Attains or Exceeds NR140 Enforcement Standard
J: LOD < Result < LOQ D: Duplicate (Duplicates and QC Failures are not included in totals) PWS: Data from Public Water Supply

License: 1508 KOHLER CO LF FID: 460015380 Southeast Region County: Sheboygan

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
303	MW-22U	NI272	WT Obs Well-Non Sub D	Active	Down	Y	(Continued)

Sample Date		Parameter		Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
12/16/1998	** Totals For All Detects ** Detect Count: 5 Total:			27.000									
03/24/1999	D	32106	CHLOROFORM IN WHOLE WATER SAMPLE (UG/L)	2.300		ug/L	J	1.5	5.0		F	M	F
	D	34010	TOLUENE IN WHOLE WATER SAMPLE (UG/L)	.500		ug/L	J	0.5	1.7		F	M	M
	D	34423	DICHLOROMETHANE IN WHL WTR SAMPLE (UG/L)	1.100		ug/L	J	0.75	2.5		F	M	F
	D	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	2.100		ug/L		0.5	1.7		M	M	M
	D	39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	2.200		ug/L	J	1.25	4.2		M	M	M
	D	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	14.400	(P)	ug/L		0.75	2.5		M	M	M
		32106	CHLOROFORM IN WHOLE WATER SAMPLE (UG/L)	2.200		ug/L	J	1.5	5.0		F	M	F
		34010	TOLUENE IN WHOLE WATER SAMPLE (UG/L)	.600		ug/L	J	0.5	1.7		F	M	M
		34423	DICHLOROMETHANE IN WHL WTR SAMPLE (UG/L)	.950		ug/L	J	0.75	2.5		F	M	F
		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	2.000		ug/L		0.5	1.7		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	2.000		ug/L	J	1.25	4.2		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	14.300	(P)	ug/L		0.75	2.5		M	M	M
	** Totals For All Detects ** Detect Count: 3 Total:			18.300									
06/28/1999		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	1.750		ug/L		0.5	1.7		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	4.000		ug/L	J	1.25	4.2		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	2.150		ug/L	J	1.25	4.2		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	12.200	(P)	ug/L		0.75	2.5		M	M	M
	** Totals For All Detects ** Detect Count: 4 Total:			20.100									
09/22/1999		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	1.100		ug/L	J	0.5	1.7		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	2.150		ug/L	J	1.25	4.2		M	M	F
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	1.800		ug/L	J	1.25	4.2		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	7.000		ug/L		0.75	2.5		M	M	M
	** Totals For All Detects ** Detect Count: 3 Total:			9.900									
12/21/1999		34030	BENZENE IN WHOLE WATER SAMPLE (UG/L)	.250		ug/L	J	0.15	0.5		M	M	M
		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	1.030		ug/L		0.2	0.7		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	2.760	(E)	ug/L		0.2	0.7		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	2.040	(P)	ug/L		0.25	0.8		M	M	M

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License: 1508 KOHLER CO LF FID: 460015380 Southeast Region County: Sheboygan

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
303	MW-22U	NI272	WT Obs Well-Non Sub D	Active	Down	Y	(Continued)

Sample Date		Parameter			Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
12/21/1999		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		5.650		ug/L		0.25	0.8		M	M	M
	** Totals For All Detects **	Detect Count: 5	Total:		11.730									
03/21/2000		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		.830		ug/L		0.2	0.7		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		.990	(E)	ug/L		0.2	0.7		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)		1.490	(P)	ug/L		0.25	0.8		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		5.970		ug/L		0.25	0.8		M	M	M
	** Totals For All Detects **	Detect Count: 4	Total:		9.280									
09/25/2000		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		1.210		ug/L		0.3	1.0		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		1.160	(E)	ug/L		0.2	0.7		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)		2.240	(P)	ug/L		0.35	1.2		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		9.350	(P)	ug/L		0.35	1.2		M	M	M
	** Totals For All Detects **	Detect Count: 4	Total:		13.960									
03/15/2001	D	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		.560		ug/L	J	0.3	1.0		M	M	M
	D	39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)		1.550	(P)	ug/L		0.35	1.2		M	M	M
	D	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		5.920		ug/L		0.35	1.2		M	M	M
		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		.610		ug/L	J	0.3	1.0		M	F	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)		1.590	(P)	ug/L		0.35	1.2		M	F	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		7.300	(P)	ug/L		0.35	1.2		M	F	M
	** Totals For All Detects **	Detect Count: 0	Total:		.000									
09/18/2001		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		1.200		ug/L		0.3	1.0		M	M	M
		34546	TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)		.540		ug/L	J	0.3	1.0		M	M	M
		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)		2.380	(P)	ug/L		0.35	1.2		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		7.970	(P)	ug/L		0.35	1.2		M	M	M
	** Totals For All Detects **	Detect Count: 4	Total:		12.090									
03/11/2002		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)		1.360		ug/L		0.35	1.2		M	M	M
		34546	TRANS-1,2-DICHLOROETHENE, TOTAL, IN WATER (UG/L)		.150		ug/L	J	0.15	0.5		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		.300		ug/L	J	0.15	0.5		M	M	M

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License: 1508 KOHLER CO LF FID: 460015380 Southeast Region County: Sheboygan

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
303	MW-22U	NI272	WT Obs Well-Non Sub D	Active	Down	Y	(Continued)

Sample Date		Parameter		Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
03/11/2002		39180	TRICHLOROETHYLENE (TCE) IN WHOLE WTR SAMPLE (UG/L)	1.680	(P)	ug/L		0.1	0.3		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	7.770	(P)	ug/L		0.1	0.3		M	M	M
		** Totals For All Detects **	Detect Count: 5	Total: 11.260									

Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std
304	MW-22L	NI273	Piezometer-Non Sub D Well	Active	Down	Y

Sample Date		Parameter		Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
09/22/1998		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	.280		ug/L	J	0.1	0.3		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	.280		ug/L	J	0.25	0.8		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	1.060		ug/L		0.15	0.5		M	M	M
		** Totals For All Detects **	Detect Count: 3	Total: 1.620									
12/17/1998	D	34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	.150		ug/L	J	0.1	0.3		M	M	M
	D	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	.800	(E)	ug/L		0.25	0.8		M	M	M
	D	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	1.110		ug/L		0.15	0.5		M	M	M
		32106	CHLOROFORM IN WHOLE WATER SAMPLE (UG/L)	.440		ug/L	J	0.3	1.0		F	M	F
		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	.160		ug/L	J	0.1	0.3		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	.930	(E)	ug/L		0.25	0.8		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	1.160		ug/L		0.15	0.5		M	M	M
		** Totals For All Detects **	Detect Count: 3	Total: 2.250									
03/25/1999		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	.140		ug/L	J	0.1	0.3		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	3.530		ug/L		0.15	0.5		M	M	M
		** Totals For All Detects **	Detect Count: 2	Total: 3.670									
06/29/1999		34496	1,1-DICHLOROETHANE IN WHOLE WATER SAMPLE (UG/L)	.140		ug/L	J	0.1	0.3		M	M	M
		39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)	4.440	(E)	ug/L		0.25	0.8		M	M	M
		77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)	5.180		ug/L		0.15	0.5		M	M	M
		** Totals For All Detects **	Detect Count: 3	Total: 9.760									

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Point ID	Point Name	WUWN	Point Type	Point Status	Gradient	Enf Std	
304	MW-22L	NI273	Piezometer-Non Sub D Well	Active	Down	Y	(Continued)

Sample Date	Parameter			Result Amount		Units	Qual Code	LOD	LOQ	Rep Limit	QC1	QC2	QC3
09/23/1999	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		3.400	(E)	ug/L		0.5	1.7		M	M	F
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		7.600	(P)	ug/L		0.3	1.0		M	M	M
	** Totals For All Detects **	Detect Count: 1	Total:	7.600									
12/22/1999	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		8.010	(E)	ug/L		0.2	0.7		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		12.500	(P)	ug/L		0.25	0.8		M	M	M
	** Totals For All Detects **	Detect Count: 2	Total:	20.510									
03/22/2000	34010	TOLUENE IN WHOLE WATER SAMPLE (UG/L)		.150		ug/L	J	0.15	0.5		M	M	M
	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		11.900	(E)	ug/L		0.2	0.7		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		13.200	(P)	ug/L		0.25	0.8		M	M	M
	** Totals For All Detects **	Detect Count: 3	Total:	25.250									
09/26/2000	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		8.500	(E)	ug/L		0.5	1.7		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		23.200	(P)	ug/L		0.88	2.9		M	M	M
	** Totals For All Detects **	Detect Count: 2	Total:	31.700									
03/16/2001	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		5.880	(E)	ug/L		0.4	1.3		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		20.680	(P)	ug/L		0.7	2.3		M	M	M
	** Totals For All Detects **	Detect Count: 2	Total:	26.560									
09/18/2001	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		12.700	(E)	ug/L		0.4	1.3		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		32.640	(P)	ug/L		0.7	2.3		M	M	M
	** Totals For All Detects **	Detect Count: 2	Total:	45.340									
03/12/2002	39175	VINYL CHLORIDE IN WHOLE WATER SAMPLE (UG/L)		11.680	(E)	ug/L		0.3	1.0		M	M	M
	77093	CIS-1,2-DICHLOROETHENE, WHOLE WATER (UG/L)		20.100	(P)	ug/L		0.2	0.7		M	M	M
	** Totals For All Detects **	Detect Count: 2	Total:	31.780									

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Attachment 4

Site Inspection Checklist

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Kohler [illegible]	**Date of inspection:** August 8, 2002
Location and Region: Kohler, WI / Region V	**EPA ID:** WID006073225
Agency, office, or company leading the five-year review: WI Dept. of Natural Resources	**Weather/temperature:** Sunny, 78° F

Remedy Includes: (Check all that apply)

- (G) Landfill cover/containment
- (G) Access controls
- G Institutional controls
- (G) Groundwater pump and treatment
- G Surface water collection and treatment
- (G) Other Perimeter Drainage System
- (G) Monitored natural attenuation
- G Groundwater containment
- G Vertical barrier walls

Attachments: G Inspection team roster attached (G) Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Richard A. Pfarrer (Name) Supervisor (Title) 8/8/2002 (Date)
   Interviewed (G) at site G at office G by phone Phone no. (920) 457-4441
   Problems, suggestions; G Report attached _____

2. **O&M staff** Mike Foley (Name) Project Analyst (Title) 8/8/2002 (Date)
   Interviewed (G) at site G at office G by phone Phone no. (920) 457-4441
   Problems, suggestions; G Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency City of Sheboygan POTW
Contact David Doerr (Name) Superintendent (Title) 6/12/02 (Date) (920)459-3464 (Phone no.)
Problems; suggestions; (G) Report attached _____

Agency City of Sheboygan POTW
Contact Al Zingler (Name) Manager (Title) 6/17/02 (Date) (920)459-3464 (Phone no.)
Problems; suggestions; (G) Report attached _____

Agency _____
Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone no.)
Problems; suggestions; G Report attached _____

Agency _____
Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone no.)
Problems; suggestions; G Report attached _____

4. **Other interviews** (optional) (G) Report attached.

Cameron Davis - Lake Michigan Federation (TAG recipients)

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - G O&M manual — G Readily available — G Up to date — (G) N/A
   - (G) As-built drawings — (G) Readily available — (G) Up to date — G N/A
   - (G) Maintenance logs — (G) Readily available — (G) Up to date — G N/A

   Remarks: Contractor services daily inspected (leachate pumping system) Records analyzed daily

2. **Site-Specific Health and Safety Plan** — (G) Readily available — (G) Up to date — G N/A
   - (G) Contingency plan/emergency response plan — (G) Readily available — (G) Up to date — G N/A

   Remarks: The Kohler Company has an Integrated Contingency Plan for the entire plant including landfill

3. **O&M and OSHA Training Records** — (G) Readily available — (G) Up to date — G N/A

   Remarks: Extensive list of 40 CFR trained staff

4. **Permits and Service Agreements**
   - G Air discharge permit — G Readily available — G Up to date — (G) N/A
   - G Effluent discharge — G Readily available — G Up to date — (G) N/A
   - (G) Waste disposal, POTW — (G) Readily available — (G) Up to date — G N/A
   - G Other permits _____ — G Readily available — G Up to date — G N/A

   Remarks: Permit # 1029-3 / Discharges to Sheboygan POTW

5. **Gas Generation Records** — G Readily available — G Up to date — (G) N/A

   Remarks:

6. **Settlement Monument Records** — G Readily available — G Up to date — (G) N/A

   Remarks: None required; landfill surveyed yearly

7. **Groundwater Monitoring Records** — (G) Readily available — (G) Up to date — G N/A

   Remarks: On record with DNR

8. **Leachate Extraction Records** — (G) Readily available — (G) Up to date — G N/A

   Remarks: Monitored and recorded daily / each sump is individually monitored as well

9. **Discharge Compliance Records**
   - G Air — G Readily available — G Up to date — (G) N/A
   - (G) Water (effluent) — (G) Readily available — (G) Up to date — G N/A

   Remarks: Semi-annual reports the City of Sheboygan

10. **Daily Access/Security Logs** — (G) Readily available — (G) Up to date — G N/A

    Remarks: Kohler security makes regular inspections
    Landfill manager does a daily inspection (recorded)

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented — G Yes (G) No G N/A
Site conditions imply ICs not being fully enforced — G Yes (G) No G N/A

Type of monitoring (*e.g.*, self-reporting, drive by) PRP monitors site/DNR inspects
Frequency PRP - Daily WDNR - Various times
Responsible party/agency Kohler Company
Contact Dick Pfaller (Name) Supervisor (Title) 8/08/2007 (Date) (920)457-4441 (Phone no.)

Reporting is up-to-date — (G) Yes G No G N/A
Reports are verified by the lead agency — G Yes G No (G) N/A

Specific requirements in deed or decision documents have been met — G Yes G No (G) N/A
Violations have been reported — G Yes (G) No G N/A
Other problems or suggestions: G Report attached
No problems

2. **Adequacy** (G) ICs are adequate G ICs are inadequate G N/A
Remarks Kohler Co. does a good job of inspecting and policing the landfill property.

D. General

1. **Vandalism/trespassing** G Location shown on site map (G) No vandalism evident
Remarks

2. **Land use changes on site** (G) N/A
Remarks

3. **Land use changes off site** (G) N/A
Remarks

VI. GENERAL SITE CONDITIONS

A. Roads (G) Applicable G N/A

1. **Roads damaged** G Location shown on site map (G) Roads adequate G N/A
Remarks Gravel roads - easily traversed

8. **Wet Areas/Water Damage** (G) Wet areas/water damage not evident
G Wet areas G Location shown on site map Areal extent_____
G Ponding G Location shown on site map Areal extent_____
G Seeps G Location shown on site map Areal extent_____
G Soft subgrade G Location shown on site map Areal extent_____
Remarks_____

9. **Slope Instability** G Slides G Location shown on site map (G) No evidence of slope instability
Areal extent_____
Remarks Looks really good!

B. Benches (G) Applicable G N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** G Location shown on site map (G) N/A or okay
Remarks_____

2. **Bench Breached** G Location shown on site map (G) N/A or okay
Remarks_____

3. **Bench Overtopped** G Location shown on site map (G) N/A or okay
Remarks Benches functioning as designed

C. Letdown Channels (G) Applicable G N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** G Location shown on site map (G) No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** G Location shown on site map (G) No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** G Location shown on site map (G) No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

E. Gas Collection and Treatment G Applicable (G) N/A

1. **Gas Treatment Facilities**
   G Flaring G Thermal destruction G Collection for reuse
   G Good condition G Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   G Good condition G Needs Maintenance
   Remarks N/A

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   G Good condition G Needs Maintenance (G) N/A
   Remarks_____

F. Cover Drainage Layer (G) Applicable G N/A

1. **Outlet Pipes Inspected** G Functioning (G) N/A
   Remarks_____

2. **Outlet Rock Inspected** (G) Functioning G N/A
   Remarks_____

G. Detention/Sedimentation Ponds G Applicable (G) N/A

1. **Siltation** Areal extent_____ Depth_____ (G) N/A
   G Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   G Erosion not evident
   Remarks N/A

3. **Outlet Works** G Functioning (G) N/A
   Remarks_____

4. **Dam** G Functioning (G) N/A
   Remarks_____

C. Treatment System (G) Applicable G N/A

1. **Treatment Train** (Check components that apply)
   G Metals removal G Oil/water separation G Bioremediation
   G Air stripping G Carbon adsorbers
   G Filters
   G Additive (*e.g.*, chelation agent, flocculent)
   G Others Leachate Capture System
   (G) Good condition G Needs Maintenance
   (G) Sampling ports properly marked and functional
   (G) Sampling/maintenance log displayed and up to date
   (G) Equipment properly identified
   G Quantity of groundwater treated annually Varies
   G Quantity of surface water treated annually None
   Remarks

2. **Electrical Enclosures and Panels** (properly rated and functional)
   G N/A (G) Good condition G Needs Maintenance
   Remarks

3. **Tanks, Vaults, Storage Vessels**
   G N/A (G) Good condition G Proper secondary containment G Needs Maintenance
   Remarks

4. **Discharge Structure and Appurtenances**
   G N/A (G) Good condition G Needs Maintenance
   Remarks

5. **Treatment Building(s)**
   (G) N/A G Good condition (esp. roof and doorways) G Needs repair
   G Chemicals and equipment properly stored
   Remarks

6. **Monitoring Wells** (pump and treatment remedy)
   (G) Properly secured/locked (G) Functioning (G) Routinely sampled (G) Good condition
   (G) All required wells located G Needs Maintenance G N/A
   Remarks Looked good - Properly labeled and secured with electrical lock-out tags

D. Monitoring Data

1. Monitoring Data
   (G) Is routinely submitted on time (G) Is of acceptable quality

2. Monitoring data suggests:
   G Groundwater plume is effectively contained (G) Contaminant concentrations are declining

C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.
	No problems anticipated. Unexpected costs were mostly the result of a 100-year(±) storm event prior to the establishment of adequate vegetative cover and optional upgrades that improved the efficiency of the system.

D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.
	The Kohler Co. has done a good job monitoring the systems and implementing effeciencies when needed. I see no need for changes at this time.

TWIN OAKS LANDFILL

August 6, 2002

YEAR	SAMPLING	O&M	Leachate Discharge	TOTAL
1997 (1)	$ 49,270.00	$ 6,133.95	$ 538.17	$ 55,942.12
1998 (2)	$ 49,759.40	$ 67,947.61	$ 7,456.04	$ 125,163.05
1999 (3)	$ 62,554.00	$ 36,583.32	$ 5,618.99	$ 104,756.31
2000	$ 54,680.00	$ 3,124.82	$ 4,778.88	$ 62,583.70
2001	$ 57,483.86	$ 1,121.91	$ 6,802.18	$ 65,407.95
2002 (4)	$ 34,239.54	$ 3,533.14	$ 3,736.05	$ 41,508.73

(1) The leachate collection system was only operational in December 1997

(2) In 1998, O&M costs were elevated due to the occurance of a severe rain event that caused significant damage to the final cover system ($19,450.48). Further, a totalizing metering vault was installed to provide a back-up to the flow meter system included in the original design ($31,645.00).

(3) In 1999, the sampling costs increased due to the addition of four groundwater monitoring wells. Also, the O&M costs were higher than expected due to the failure and replacement of the flow meters in each sump ($22,547.63)

(4) January 2002 through July 2002

Attachment 5

Interview Records

INTERVIEW RECORD

Site Name: Kohler Company - Landfill	**EPA ID No.:** WID 980 615 340
Subject: Five-Year Review	**Time:** 11:00 a.m. **Date:** 7/31/02
Type: (9) Telephone 9 Visit 9 Other **Location of Visit:** WDNR - Central Office	9 Incoming (9) Outgoing

Contact Made By:

Name: Philip Fowle	**Title:** Hydrogeologist	**Organization:** WDNR

Individual Contacted:

Name: Cameron Davis	**Title:** Executive Director	**Organization:** Lake Michigan Federation
Telephone No: (312) 939-0708 (Ext #2) **Fax No:** (312) 939-2708 **E-Mail Address:**	**Street Address:** 220 S. State Street **City, State, Zip:** Suite 1900 Chicago, IL 60604	

Summary Of Conversation

The Lake Michigan Federation (LMF) was awarded a TAG grant during the assessment phase of the initial remedial action. They commented extensively regarding the remedial design. I explained to Mr. Davis the purpose of my call and explained the 5-Year Review process. Mr. Davis stated that they had not assigned anyone to the Kohler LF site since the signing of the ROD. Mr. Davis thanked me for soliciting the LMF's input, but stated that they had nothing to contribute to the process.

Philip Fowle 7/31/02

INTERVIEW RECORD

Site Name: Kohler Company Landfill		**EPA ID No.:** WID 980 [illegible]
Subject: Five-Year Review		**Time:** 3:00 pm **Date:** 6/12/03
Type: (9) Telephone 9 Visit 9 Other **Location of Visit:** WDNR - Central Office		(9) Incoming 9 Outgoing

Contact Made By:

Name: Philip Fandrie	**Title:** Hydrogeologist	**Organization:** WDNR

Individual Contacted:

Name: David Doerr	**Title:** Superintendent	**Organization:** Sheboygan POTW
Telephone No: (920) 459-3404 **Fax No:** **E-Mail Address:** WWTP@ci.sheboygan.wi.us	**Street Address:** 3333 Lakeshore Dr. **City, State, Zip:** Sheboygan, WI 53081	

Summary Of Conversation

Spoke with David Doerr Superintendent of the City of Sheboygan's Public Treatment Works (POTW). The Sheboygan POTW receives the untreated liquid from the remedial system at the Kohler Landfill. Mr. Doerr related the following:

1) The POTW has not had any problems accepting the effluent from the Kohler Landfill remedial system. The system is only at 65% so the additional loading is no problem.
2) The Kohler Co. has complied with all provisions of their discharge permits including testing and payments.
3) The POTW has found the Kohler Co. to be very responsive.

Footnote: At Mr. Doerr's suggestion, I also spoke with Al Ziegler from the Sheboygan POTW at 3 p.m. on 6/17/03. Mr. Ziegler confirmed Mr. Doerr's statements and stated that the Sheboygan POTW has not had any problems accepting effluent from the Kohler L.F.

Philip Fandrie 7/29/03

Attachment 6

Public Outreach By WDNR and Kohler Company

WISCONSIN
DEPT. OF NATURAL RESOURCES

NEWS

Southeast Region Headquarters - Milwaukee
Wisconsin Department of Natural Resources
2300 N Dr. Martin Luther King Jr. Dr.
PO Box 12436 Milwaukee, WI 53212
Phone: (414) 263-8500 TDD: (414) 263-8713

April 22, 2002
CONTACT: Philip Fauble, Hydrogeologist, 608-267-3538

Five-year review scheduled for Kohler Company Landfill Superfund site

MILWAUKEE – The Department of Natural Resources (DNR), in cooperation with the U.S. Environmental Protection Agency (EPA), will conduct a five-year review of the remedial actions implemented at the Kohler Company Landfill Superfund site. The site is located on a parcel of land bounded on the south and east by the Sheboygan River, to the west and south by County Trunk Highway "A" and to the north by County Trunk Highway "PP", all within the corporate limits of the Village of Kohler in Sheboygan County

A five-year review is required under federal law for all Superfund sites where wastes that limit site use were left in place after the cleanup action was completed. During the review process, the DNR will check the progress of the cleanup to ensure that the remedy is protecting both people and the environment. To accomplish this, the DNR will study information and monitoring data from the site and inspect the site to determine the effectiveness of the cleanup. Once these activities have been completed and documented, the DNR will write a report summarizing their findings and submit the report to the EPA for their review and approval. The DNR will also prepare a summary for public distribution after the review is finished and place a copy of the review at a public site repository for anyone to read.

As part of the five-year review, the DNR is soliciting comments from the public to assist in determining whether or not the cleanup was effective and the site is safe. If anyone has knowledge of any problems, potential problems or concerns about the Kohler Company Landfill in regards to the Superfund cleanup remedy, please contact Philip Fauble, Hydrogeologist, Department of Natural Resources, P.O. Box 7921, Madison, WI 53707-7921 by June 1, 2002. Comments can also be sent electronically to faublp@dnr.state.wi.us or by phone at (608) 267-3538. For further information regarding the cleanup remedy, copies of the Administrative Record for the Kohler Company Landfill Superfund Site are available for viewing at the Meade Public Library, 710 N. 8th Street, Sheboygan, WI 53081.

-30-

The following counties are in the Southeast Region: Kenosha, Milwaukee, Ozaukee, Racine, Sheboygan, Walworth, Washington, Waukesha.

The public affairs manager for the DNR Southeast Region is: Kathleen Wolski - (414) 263-8516.

KOHLER

April 22, 2002

capsule

SPECIAL EARTH DAY ISSUE

twin oaks LANDFILL UPDATE

A protective cap now covers 75 percent of the Twin Oaks site.

Earthen "umbrella" and high-tech "drain" safeguards set for five-year review

Kohler Co.'s sustained environmental stewardship of the Twin Oaks landfill is approaching another milestone: a five-year technical review of protections completed in 1997. Conducted by the Wisconsin Department of Natural Resources (WDNR) in consultation with the United States Environmental Protection Agency (EPA), the review is expected to confirm that the safeguards at the Superfund site are meeting objectives.

Essentially, the review will assess the two remedies agreed upon by the local community, by the regulating agencies, and by Kohler Co. to determine if they are functioning as designed to protect the health of associates and area residents, and to minimize any potential impact on the environment. The remedies include an earthen "cap" to seal off the site and protect it from the elements, and a high-tech containment trench and pumping system to capture contaminants in the groundwater.

"Soil tests confirm that the cap meets technical specifications," says **Dick Pfarrer**, Senior Staff Engineer – Environmental Health & Safety, Kohler Co. "And early indications strongly suggest that the containment safeguard is functioning as intended."

Published for Kohler Co. associates and the community by Kohler Co. Communications.

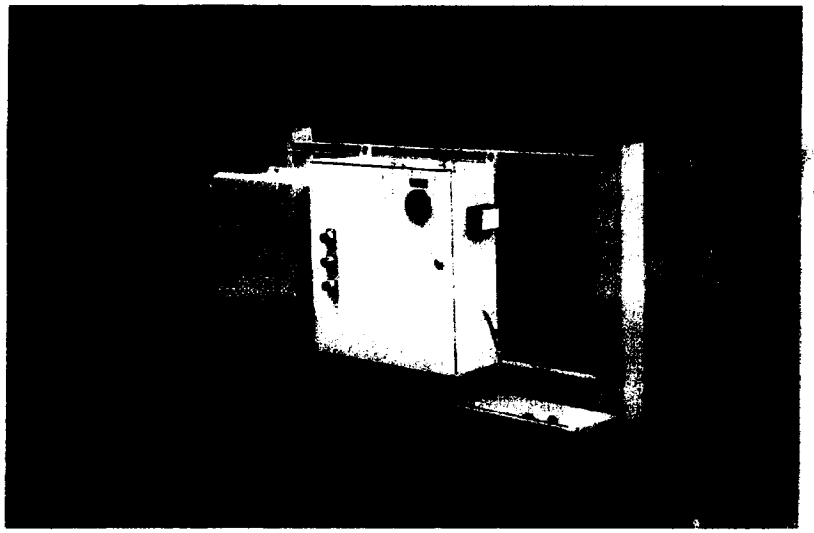
Safeguarding the source. An earthen "umbrella"

The multi-layer, WDNR-approved earthen cap is simple but sophisticated. Consisting of a two-foot layer of re-compacted clay, a 30-inch "protection" layer of sand and soil, and a 6-inch layer of topsoil to support stabilizing vegetation, the cap protects workers — and wildlife as well — from exposure to landfilled materials.

"The cap now covers 75 percent of the site," says Pfarrer. "It acts like a natural umbrella. Rainwater simply runs off it, and the vegetation — along with surface water control features — eliminates erosion. Only a few percent of rainwater infiltrates the cap.

"We're confident that the cap is effective because it was tested regularly during installation to ensure that it met all specifications. For example, in the course of capping four additional acres in 2001, several hundred soil samples were taken and the results were submitted to the WDNR in a thorough technical report."

Rainwater simply runs off the cap, and the vegetation — along with surface water control features — eliminates erosion.



A subterranean trench and pumping system intercepts groundwater before it can leave Twin Oaks.

Protecting groundwater: a high-tech "drain"

As chosen by the EPA, the WDNR and the local community, the second remedy called for the on-site capture of groundwater flowing beneath the landfill. A 10- to 15-foot deep, 2500-foot-long trench was excavated along the base of the landfill. This subterranean trench and pumping system intercepts groundwater before it can leave Twin Oaks.

While most groundwater usually travels just a few inches a year, it can move through fissures much more rapidly. With that potential and with the Sheboygan River in mind as well, the containment system captured and pumped almost 8 million gallons of water in 2001 — somewhere between 15,000 and 20,000 gallons of water per day.

"Only a tiny fraction of that total is from the landfill itself," says Pfarrer. "But because the hydro-geology of the area is dominated by the pull of the river, we're drawing in millions of gallons of clean ground water from the immediate vicinity to create a drain. You could say that we're making the groundwater water run uphill against its natural flow to the river."

The captured water — sent to the publicly-owned water treatment facility in Sheboygan — meets EPA guidelines for safe discharges.

"The system has been designed to capture between 95 and 98 percent of the contaminated groundwater," says Pfarrer. "By any measure, that's a very effective system."

History

Since its inception in the 1950s, Twin Oaks has primarily been used for the disposal of non-hazardous manufacturing wastes such as foundry sand and pottery cull, and has been closely managed in accordance with all existing laws and regulations. Past disposal practices allowed landfilling of solvents, lead-bearing wastes, and oils from Kohler's manufacturing operations; disposal of these wastes ceased prior to the inception of new environmental laws in 1980.

Twin Oaks was placed on the National Priorities List and designated as a Superfund site in 1985. Kohler Co. took full responsibility for safe-guarding the site, and, from 1985 to 1991, conducted studies to assess any possible human health risks or environmental threats. After this extensive review process, the EPA, the WDNR, and the local community selected the "capping" and "drain" remedies for long-term site management.

The Twin Oaks landfill is situated on a 52-acre parcel of land bounded on the south, east and far west by the Sheboygan River, to the west and south by Country Trunk "A," and to the north by Highway "PP."

Twin Oaks intensified the already substantial analysis of all manufacturing processes to reduce waste.

Another Kohler Co. response: reduce waste and recycle

Kohler Co.'s reputation for design and for technically-advanced products and processes is matched by the company's long-held respect for resources and history. In fact, the Kohler Co. factory district — still in use today — was named to both the National and State registers of Historic Places in 2001.

"We have a progressive attitude at Kohler Co., and Twin Oaks intensified the already substantial analysis of all manufacturing processes to reduce waste," says Pfarrer. "The result is that we're putting less and less into the landfill each year."

The company has also expanded recycling programs and constructed a large storage pad at the landfill to allow for the stockpiling of wastes for beneficial reuse. While plans for the closing of Twin Oaks are on the horizon, the landfill remains open for the reduced stream of non-hazardous waste because it doesn't present a risk to associates, area residents, or the environment.

The successful operation of Twin Oaks and the selection and implementation of the selected remedy have been a team effort. "Virtually everyone working at the Kohler facility has taken part in some aspect of these efforts," says **Paul Kubicek**, Manager – EHS Technical Resources. "The reduction of waste by facility personnel, the site safety and security, the marketing of waste materials for beneficial reuse, and the proper operation, monitoring, design, and management of Twin Oaks has included the efforts of the entire Kohler Co. team."

feedback

The Wisconsin Department of Natural Resources will be contacting the local community for comments and concerns about Twin Oaks.